

Chapter 01

Introduction to Watershed Management

1.1 Definition of a Watershed

A watershed is the area of land that water flows across or through as it makes its way to a specific point in a stream, river, lake, or even the ocean. That flowing water can come from a variety of sources: rainfall, snowmelt, springs, and even from a water hose. Every bit of land on our planet is part of a watershed. Watersheds can contain smaller subwatersheds and can also be contained within larger watersheds. A healthy watershed, according to the United States Environmental Protection Agency (EPA), is an area that supports dynamic environmental processes and habitats of sufficient size and connectivity to support native species and meets the physical and chemical water quality standards needed to support biological communities (EPA 2012).

1.2 Watershed and Water Quality

The water that flows into a waterbody directly impacts the quality of that waterbody due to the natural processes and human activities that occur within a watershed. These processes and activities may generate pollutants which end up in the waterbody. Pollutants can enter a waterbody from either a “point source,” a fixed location such as a pipe or channel, or a “nonpoint source” that is washed off the landscape by rainfall. Point sources, and some urban nonpoint sources, are regulated and require a permit to discharge to waterways. Nonpoint sources are not regulated and are managed primarily through responsible stewardship and voluntary practices. Water quality management approaches aim to improve and maintain optimal water quality for a specific waterbody by preventing and reducing pollution.

1.3 The Watershed Approach

The watershed approach is widely accepted by state and federal water resource management agencies to facilitate water quality management. EPA describes the watershed approach as “a flexible framework for managing water resource quality and quantity within specified drainage areas or watersheds” (EPA 2008). This process requires engaging stakeholders to make management decisions supported by sound science (EPA 2008). One critical aspect of this approach is that it focuses on hydrologic boundaries rather than political boundaries.

1.4 Watershed Protection Planning

A watershed protection plan (WPP) is a voluntary, locally driven watershed approach that addresses complex water quality problems across political boundaries. WPPs provide a framework for managing efforts to both restore water quality and protect overall watershed health.

WPPs vary in methodology, content, and strategy based on local priorities and needs. To streamline the WPP development process, EPA developed nine key elements that should be incorporated in WPPs (EPA 2008). These include:

1. Identification of causes and sources of impairment,
2. Expected load reductions from management strategies,
3. Proposed management measures,
4. Technical and financial assistance needed to implement management measures,
5. Information, education, and public participation needed to support implementation,
6. Schedule for implementing management measures,
7. Milestones for measuring progress of WPP implementation,
8. Criteria for determining the success of WPP implementation,
9. Water quality monitoring

The Thompsons Creek WPP incorporates the above key elements, which are designed to guide the development of an effective WPP.

1.5 Stakeholder Involvement in Watershed Protection Planning

Since watersheds do not follow political boundaries such as county lines or city limits, stakeholders must work together in unique ways to address water quality problems in their watersheds. A stakeholder is anyone who lives, works, or has interest in the watershed or may be affected by efforts to address water quality issues. Stakeholders may include individuals, groups, businesses, organizations, or agencies.

Continuous involvement of stakeholders throughout the watershed planning process is critical for effectively selecting, designing, and implementing management measures that address watershed water quality. Their knowledge of local social, economic, political, and ecological conditions provides context to measure proposed solutions. Also, the goals, problems, and remediation strategies generated by stakeholders clarify what is desirable and achievable. Because stakeholders work together, actions are

based upon shared information and a common understanding of the roles, priorities, and responsibilities of all involved parties.

1.6 Education and Outreach

The development and implementation of a WPP depends on effective education, outreach, and engagement efforts to inform stakeholders, landowners, and residents of the activities and practices associated with the WPP. Education and outreach events provide new or improved information to stakeholders through the WPP implementation process. Education and outreach are integrated into many of the management measures that are detailed in this WPP.

1.7 Taking Action

Part of the successful development and implementation of any plan — whether watershed-based or otherwise — is incorporating a systematic, iterative approach through adaptive management. The goals of a WPP can be reached by learning from favorable and unfavorable outcomes, adjusting inputs, and exploring alternative solutions based on information gathered throughout its implementation. Typically, WPPs are developed based on management measures and goals over a ten-year period; however, adaptive management allows for adjustments to be made as warranted based on feedback, needs, and new knowledge. The iterative nature of the watershed approach encourages partners to set goals and targets and to make maximum progress based on available information while continuing analysis and verification in areas where information is incomplete.

References

United States Environmental Protection Agency (EPA). 2008. Handbook for Developing Watershed Plans to Restore and Protect Our Waters. <https://www.epa.gov/nps/handbook-developing-watershed-plans-restore-and-protect-our-waters>

EPA. 2012. Identifying and Protecting Healthy Watersheds.

<https://www.epa.gov/sites/default/files/2015-10/documents/hwi-watersheds-complete.pdf>